

CLAIMS

WHAT IS CLAIMED IS:

1. A process to refine a conjugated linoleic acid-containing material comprising:

distilling a first ester stream containing esters of conjugated linoleic acids using a
5 distillation apparatus; and

producing a second ester stream enriched in the esters of conjugated linoleic acids.

2. The process of claim 1, wherein the distilling step uses a single or multi-pass distillation operation.

3. The process of claim 1, wherein the distillation apparatus optionally contains a
10 fractionating column.

4. The process of claim 1, wherein the distillation apparatus is a low residence time distillation apparatus.

5. The process of claim 1, wherein the distillation apparatus is operated at a reduced pressure of greater than about 0 and lower than about 760 mmHg.

6. The process of claim 1, further comprising the step of at least partially removing side
15 products generated during the formation of the first ester stream.

7. The process of claim 1, further comprising the step of at least partially removing unconjugated linoleic acid components in the first ester stream.

8. A process to produce a refined conjugated linoleic acid-containing material,
20 comprising:

transesterification of a linoleic acid-containing oil to generate a composition containing linoleic acid esters;

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isomerization of the composition containing linoleic acid esters to form a first stream containing conjugated linoleic acid esters; and

distillation of the first stream to produce a second stream enriched in conjugated linoleic acid esters.

- 5 9. The process of claim 8, wherein the distillation step is performed by a low residence time distillation apparatus capable of being operated at a reduced pressure.
10. The process of claim 8, wherein the step of isomerization is catalyzed by a catalyst base in a nonaqueous system.
11. The process of claim 10, wherein the catalyst base is an alkali or alkaline earth
10 alkoxide salt of a C₁-C₄ alkyl group alcohol.
12. The process of claim 11, wherein the cation of the alkoxide salt is a sodium, a potassium or a calcium cation.
13. The process of claim 10, wherein the catalyst base is a solid or a solution in a conjugate alcohol of the alkoxide.
- 15 14. The process of claim 8, wherein the step of isomerization is performed between about 90-140 °C.
15. The process of claim 8, wherein the step of isomerization is performed between about 110-120 °C.
16. The process of claim 8, wherein the linoleic acid-containing oil is selected from the
20 group consisting of safflower oil, corn oil, sunflower oil, soybean oil, grape seed oil, cottonseed oil, sesame oil, derivatives thereof, and combinations thereof.
17. The process of claim 8, wherein the transesterification and isomerization steps are performed in one reaction vessel concurrently or sequentially without an intervening distillation step.

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18. The process of claim 8, wherein the transesterification and isomerization steps occur concurrently in a continuous reaction system using a dual reaction zone apparatus.

19. The process of claim 18, further comprising the step of at least partially removing side products from the transesterification step.

5 20. The process of claim 18, wherein the transesterification step is completed in a first reaction zone and the isomerization step is completed in a second reaction zone.

21. A composition enriched in refined conjugated linoleic acid esters produced by a process comprising:

providing a first stream containing conjugated linoleic acid esters; and

10 distilling the first stream to produce a second stream enriched in refined conjugated linoleic acid esters.

22. The composition of claim 21, wherein the first stream is produced by:

transesterification of a linoleic acid-containing oil to generate a composition containing linoleic acid esters; and

15 isomerization of the composition to form the first stream containing conjugated linoleic acid esters.